

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (Currently amended): A transmission system, comprising:

a sending device for converting higher-layer protocol data to continuous blocks of a fixed length, inserting idle blocks between said continuous blocks to match the sending rate to the transmission rate of the transmission line, and transmitting;

at least one stage of relay devices for receiving said continuous blocks and said idle blocks, discarding these idle blocks and continuous blocks containing bit errors to extract only valid continuous blocks, and then inserting idle blocks between said valid continuous blocks to match the sending rate to the transmission rate of the transmission line on a transmission side and transmitting to a prescribed transfer destination; and

a receiving device for receiving said continuous blocks and said idle blocks from said relay device of ~~the~~ a final stage, discarding these idle blocks and continuous blocks containing bit errors to extract only valid continuous blocks, and reconstructing said higher-layer protocol data from said valid continuous blocks,

wherein when said higher-layer protocol data takes the form of frames, said sending device converts said frames to a fixed length by adding null data to tail portions of said frames to make the frame length an integer multiple of a specified length if the length of said frames is not an integer multiple of the specified length, dividing said higher-layer protocol data into units of

the specified length, and adding to each unit of specified length a specified number of bits of type information indicating the position of that unit within said higher-layer protocol data,

said receiving device reconstructs said higher-layer protocol data by performing a conversion that is the reverse of the conversion in said sending device,

said type information indicates that said unit of specified length contains one of higher-layer protocol data comprising a head portion of a higher-layer protocol frame, higher-layer protocol data comprising a middle portion of a higher-layer protocol frame, and higher-layer protocol data comprising a tail portion of a higher-layer protocol frame, and

said type information indicating said higher-layer protocol data comprising said tail portion of a higher-layer protocol frame comprises a plurality of type information corresponding to an amount of valid data in said tail portion.

2-5. (Canceled).

6. (Currently amended): A transmission system ~~according to claim 2, wherein, when~~ said higher-layer protocol data takes the form of 8B/10B code, said transmission system comprising:

a sending device for converting higher-layer protocol data to continuous blocks of a fixed length, inserting idle blocks between said continuous blocks to match the sending rate to the transmission rate of the transmission line, and transmitting;

at least one stage of relay devices for receiving said continuous blocks and said idle blocks, discarding these idle blocks and continuous blocks containing bit errors to extract only valid continuous blocks, and then inserting idle blocks between said valid continuous blocks to match the sending rate to the transmission rate of the transmission line on a transmission side and transmitting to a prescribed transfer destination; and

a receiving device for receiving said continuous blocks and said idle blocks from said relay device of the final stage, discarding these idle blocks and continuous blocks containing bit errors to extract only valid continuous blocks, and reconstructing said higher-layer protocol data from said valid continuous blocks,

wherein said sending device converts said 8B/10B code to said blocks having a length of 133 bits by, for data code, fetching data portions of 8 bits, and for control code, representing control information by 4 bits and adding 4 bits of information indicating the position of the next control code, resulting in 8 bits, and, adding five bits of information indicating the position of the next control code to the header of every 16 codes; and

said receiving device reconstructs said higher-layer protocol data by performing a conversion that is the reverse of the conversion in said sending device.

7-9. (Canceled).

10. (Currently amended): A data transfer method for transmitting higher-layer protocol data in a transmission system that includes a sending device, at least one stage of relay devices, and a receiving device; said data transfer method comprising:

in said sending device:

~~a first step of~~ converting higher-layer protocol data to continuous blocks having a fixed length; and

~~a second step of~~ matching sending rate to the transmission rate of the transmission path by inserting idle blocks between said continuous blocks having a fixed length and transmitting;

in said relay device:

~~a third step of~~ receiving said continuous blocks having a fixed length and said idle blocks from said sending device;

~~a fourth step of~~ discarding the idle blocks and continuous blocks having a fixed length containing bit errors and extracting only said continuous blocks having a fixed length that are valid; and

~~a fifth step of~~ matching the sending rate to the transmission rate in the transmission path by inserting idle blocks between said continuous blocks having a fixed length that are valid and transmitting to a prescribed transfer destination;

and in said receiving device:

~~a sixth step of~~ receiving said continuous blocks having a fixed length and said idle blocks from ~~the~~ a final stage relay device;

~~a seventh step of discarding said idle blocks and continuous blocks having a fixed length containing bit errors and extracting only continuous blocks having a fixed length that are valid;~~
and

~~an eighth step of reconstructing said higher-layer protocol data from said continuous blocks having a fixed length that are valid,~~

wherein when said higher-layer protocol data takes the form of frames, said sending device converts said frames to a fixed length by adding null data to tail portions of said frames to make the frame length an integer multiple of a specified length if the length of said frames is not an integer multiple of the specified length, dividing said higher-layer protocol data into units of the specified length, and adding to each unit of specified length a specified number of bits of type information indicating the position of that unit within said higher-layer protocol data,

said receiving device reconstructs said higher-layer protocol data by performing a conversion that is the reverse of the conversion in said sending device,

said type information indicates that said unit of specified length contains one of higher-layer protocol data comprising a head portion of a higher-layer protocol frame, higher-layer protocol data comprising a middle portion of a higher-layer protocol frame, and higher-layer protocol data comprising a tail portion of a higher-layer protocol frame, and

said type information indicating said higher-layer protocol data comprising said tail portion of a higher-layer protocol frame comprises a plurality of type information corresponding to an amount of valid data in said tail portion.

11-17. (Canceled).

18. (New): A transmission method, comprising:

converting higher-layer protocol data to continuous blocks of a fixed length, inserting idle blocks between said continuous blocks to match the sending rate to the transmission rate of the transmission line, and transmitting;

receiving said continuous blocks and said idle blocks at a relay device, discarding these idle blocks and continuous blocks containing bit errors to extract only valid continuous blocks, and then inserting idle blocks between said valid continuous blocks to match the sending rate to the transmission rate of the transmission line on a transmission side and transmitting to a prescribed transfer destination; and

receiving said continuous blocks and said idle blocks from said relay device of a final stage, discarding these idle blocks and continuous blocks containing bit errors to extract only valid continuous blocks, and reconstructing said higher-layer protocol data from said valid continuous blocks,

wherein said converting higher-layer protocol data to continuous blocks of a fixed length comprises converting 8B/10B code to said blocks having a length of 133 bits by, for data code, fetching data portions of 8 bits, and for control code, representing control information by 4 bits and adding 4 bits of information indicating the position of the next control code, resulting in 8 bits, and, adding five bits of information indicating the position of the next control code to the header of every 16 codes, and

wherein said receiving said continuous blocks and said idle blocks from said relay device of a final stage comprises reconstructing said higher-layer protocol data by performing a conversion that is the reverse of the conversion in said sending device.